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CONSCIOUSNESS AND REALITY[1]

I. NEGATIVE DEFINITION OF CONSCIOUSNESS

I HAVE found it necessary, in the service of the anatomy of experience, to take up the scalpel of analysis again, in order to disentangle another attribute from the general mass of reality. I am not ashamed to confess that my view of reality has undergone important modifications since I first tried to state it systematically. I envy those who can survey the whole universe at once and can shoot out a system of philosophy complete and finished, as Athena sprang from the head of Zeus. But with my limitations of time and mind, I have had to attack the universe piecemeal. I first became interested in the inadequacy of the universally accepted serial view of time and the havoc that the idealists had wrought with this aspect of reality on the basis of the accepted view. I next came to realize that the serial aspect was no more adequate to the space concept than to the time concept. I later awoke to the fact that the criterion of value can not be stated in terms of finite impulse and its satisfaction; and so was brought to emphasize the reality of direction as an ultimate formal attribute of reality and independent of its stuff aspect. I thus had come to the conclusion that there must be at least three non-stuff or non-energetic dimensions of reality, viz., time, space, and direction.[2] After a year or two of meditation on consciousness I have come to think that consciousness too must be stated as a non-stuff dimension of reality, and for this point of view I wish to give the reasons in this paper.

Until my critical interest in this problem began, I had come to think of consciousness as a relation. But I have found great difficulty in stating consciousness in relational terms. If consciousness is a relation, what sort of a relation is it? Since relations as such

[1] This paper was read before the Philosophical Club of the University of Kansas, October 12, 1907.

[2] In referring to these concepts in this paper, I shall presuppose the definitions given of them in my previous publications, especially my monographs, "Time and Reality," *Psychological Review* Series, No. 26, "Space and Reality," this JOURNAL, Vol. III., pp. 533 and 589, and *International Journal of Ethics*, Vol. XVII., p. 454.

can not be regarded as existing in things outside of the scope of consciousness, but are due to our conscious purposes, and since, therefore, all relations are conscious relations, shall we identify consciousness with the sum total of relations? Or shall we identify consciousness with a special group of relations, such as the relation of subjectivity, as over against the objective relations, such as our social or sharable attitudes? In the former case we should still leave out of account consciousness which is not relational consciousness; and we should hardly make clearer our concept of relations. We should be attempting to define consciousness in terms of one of the species included under consciousness. This would be still more obvious if we make consciousness one species of relations, by identifying it with the subjective attitudes as over against the social. The social relations, too, are conscious facts, and so must somehow be taken account of in our definition of consciousness. Hence defining consciousness in terms of one species of conscious relations can hardly be satisfactory, even on a relational theory. We must abandon, then, the path of relations, for it leads to limbo. All relations are ideal constructions; and consciousness is a factor in all ideal construction, waking or dreaming. There are, moreover, forms of experience which are not of the constructive kind; and where there is experience, there surely is consciousness.

But if what you meant to say is not that consciousness is a relation between terms figuring somehow within the field of consciousness, but that it is a type of interaction between energetic centers, a type of energetic continuity between energy as nervous structure and energy as stimulus, then we shall have to ask how it figures or what difference it makes to this interaction. If this interaction is non-conscious, how can it account for the presence of consciousness? We seem to have the paradox that consciousness is a relation between non-conscious terms. The fact that it appears under certain energetic conditions of structure and stimulus does not prove that it is nothing else than the interaction of structure and stimulus, if you choose to use relation in this extraconscious sense. I can not distinguish this miraculous production of consciousness, out of non-conscious energies, from the materialistic position, which I shall discuss later.

What would seem to be indicated is that consciousness is a fact, over and beyond energetic conditions—a fact which makes all significant relations possible; which makes energy meaningful energy; just as space is not a relation or a system of relations, but makes possible the whole system of distance interactions, schematized by our constructive purpose into a system of relations; and as time is not a relation, but makes possible relations of before and after, of

past, present, and future. Thus consciousness, though not a relation, makes possible all significant relations, including time and space relations, as well as logical relations. As in the case of space it is not a question of a relation to space, but a question of the relation of energies to each other as conditioned by space, so in the case of consciousness it is not a question of the relation of facts or energies to consciousness, but the relation of these facts or energies to each other within the field of consciousness. But if this fact, which we call consciousness, is not a relation, what is it?

If consciousness is not a relation, is it a thing—another kind of thing, perhaps, from the world of things it illumines? Anaxagoras evidently felt after something which he could set over against the world of ordinary things. So he invented "*Nous,* infinite and self-ruled, mixed with nothing, the thinnest of all things and the purest; and it has all knowledge about everything and the greatest strength; and *Nous* has power over all things, over the whole revolution, so that it began to revolve in the beginning; and it set in order all things that were to be and that were; and all *Nous* is alike, both the greater and the smaller." Strange attempt this to get away from the world of quantitative processes, but lacking the tools to do so; to find something which does not move and yet is the source of motion. Aristotle in his conception of entelechy and the first mover does not get much farther. In the end, the world of process and that which is not only to make process significant, but to make it move, remain two kinds of thing. This idea of something which is not movement and yet the source of movement has been stated recently, in modern terms, by a brilliant biologist, Professor C. S. Minot: "The universe consists of force and consciousness. As consciousness by our hypothesis can initiate the change of the form of energy, it may be that without consciousness the universe would come to absolute rest."[3] But this ambiguous status of consciousness, as that which is and is not a thing, which does not move and yet is the source of movement, is not very consistent or satisfactory. We must locate consciousness in one category or the other, and to that end we must make our concepts more clear and definite.

Ostwald has found an easy way of solving the problem, so he thinks, in simply giving consciousness the name of energy. And why not? Ostwald has no end of energies. So why not add consciousness to the list? But I do not wish to minimize the service of Ostwald. In the first place his tools have not enabled him to deal

[3] *Science,* N. S., Vol. XVI., No. 392, p. 26. This is but scant recognition of the interesting discussion I had with Professor Minot last February (1907) and which helped me a great deal in formulating my own opinion, even if it does not agree with that of Professor Minot.

with consciousness as such. What he has dealt with is physiological and psychological processes. Now I freely admit that we may look upon psychological processes as energetic. I can see nothing in the way of such a view except prejudice.

The insistence in recent times that mental processes are not quantitatively comparable is due to the confusing of processes with the consciousness of processes. The consciousness of blue or pain or effort is not a quantitative affair. But the processes themselves are, however crudely, quantitatively comparable. Wherever you can apply the category of more or less, you have quantity. There are intensive quantities, as well as extensive. That we can not in the former case superimpose a quantitative unit does not prove that they do not differ in quantity. This is merely a matter of the exactness of the quantitative comparison. Fechner's mistake was not in regarding psychological processes as quantitative, but in trying to equate processes where quantitative units are possible with those where no such units are possible. It is no argument against the quantitative character of mental processes that they also differ qualitatively and that you can not equate quantity and quality. Neither can you do so in chemistry. There, too, you have to recognize certain original elements as well as quantitative relations.

Now all psychological processes, be they sensational, affectional, intellectual or volitional, differ in intensity, as well as in kind. The difference in intensity not only varies as regards more or less, but this variation bears definite and describable relations to physical and physiological conditions. Hence I see no reason why we should not use energy as a term for such differences. Pressures may be heavier or lighter without varying in kind. Colors may be brighter or fainter, pleasures or pains may be intenser or weaker, memories may last longer or shorter, ideas may be more or less vivid, the feeling of effort may vary in strength. Wherever you can vary as regards more or less, without variation in quality, there you have quantity. What else would you call it? Whether there is variation in quality as regards psychological processes, introspection must decide. There is no other judge. This difference in intensity must not be confused with our spreading out our qualitative series, such as our color series, in space in order to schematize the qualitative relations. Though our figure here is spatial, that does not make the relations quantitative. Distance here is merely figurative for the direction of difference of quality.

What I have stated in intensity terms, I might have stated in will terms. Will or desire is capable of being more or less, even if we can not measure it with exactness. All psychological processes are attention processes. They involve motor tendency and this

varies in strength. The mistake has not been in regarding conative tendencies or motives as differing in strength, but in regarding them as forces independent of the ego and acting upon the ego. Whether will, or conative tendency, which lies at the bottom of all psychic processes, is an energy different from electrical and nervous energy; how it interacts with other forms; whether it is radioactive or has some still subtler mode of making a difference; whether it acts at a distance—this would have to be dealt with in a discussion on energy and not on consciousness. At present I am inclined to think that mind-stuff is a distinctive type of energy, however ignorant we may be of its relation to other energies. Moreover, it seems evident that conative tendency is not, and therefore need not be, always conscious tendency, and that mind-stuff and consciousness, as effective at least, do not coincide. Whether, again, all energy can be reduced to one kind and whether will is that fundamental kind, is a question to be decided by scientific convenience and quite distinct from the problem of consciousness.

While we must acknowledge, then, that conscious *processes* are more or less, that they have describable relations or continuities with other processes, such as physiological and chemical, and that therefore we may extend the term energy to cover these, we can not on that account admit that consciousness as such is capable of more or less, any more than of qualitative difference. Is the consciousness of extended or heavy or colored things an extended or heavy or colored consciousness? Is the consciousness of a greater intensity a more intense consciousness than the consciousness of a less intensity? I can see no need for assuming a difference in consciousness. The variations in kind and in intensity can all be accounted for as due to variations in the complexity and intensity of the processes, conditioned by the cortex in the last analysis. There is no need in duplicating these differences on the side of consciousness. It is easier to suppose consciousness a constant and regard the variations as due to physiological processes than to duplicate the processes by making consciousness an energy. But if the fact of consciousness does not vary, either as regards quantity or quality, with the variation of energetic processes, then we may be sure that it is not itself energy or a function of energy, but must be treated as an independent dimension of reality. All our scientific evidence, introspective, biological, and pathological, fits in with this view. With the complexity of the biological structure consciousness has come into evidence, and the differentiation of conscious processes in the way of sensations, memory, reasoning has followed the growth in complexity of biological structure. And, again, with fatigue, disease and degeneracy of such structures, the complex conscious processes

fail to operate. When we are tired we fail to recall a familiar name, though we are conscious enough at the time. Disease makes us lose our visual and auditory images, makes us fail to think coherently and to regulate our activities in a purposive and orderly way, though we are as conscious as ever. The energy of conscious processes, therefore, can not be found on the side of consciousness.

Moreover, however much continuity there may be on the side of the energetic conditions of consciousness, consciousness as an effective factor no doubt appears at a leap—as light when the structural conditions of the eye are complete, or tone with the presence of the basilar membrane, or electricity when the proper motion or chemical conditions are furnished, with the difference that, while in the above cases the relations are energetic, the energies varying in some quantitative proportion, in the case of consciousness the category of energy is not applicable.

But, if consciousness is not a relation, not a thing or a form of energy, what sort of fact is it? Shall we accept the nominalist view championed by James and other introspectionists that consciousness is merely a name for the sum total of conscious processes, and that any attempt to deal with consciousness as such is a mere hypostasis—a mistaking of a logical abstraction for an independent reality? Is it like abstracting somniferousness from somniferous substances and then treating it as an independent fact? Is it nothing over and beyond certain processes?

There is surely enough truth in the nominalist view to make it plausible. We have seen by this time that consciousness can not be a thing; that, therefore, if you abstract from the processes in connection with which consciousness appears, there is no *thing* left. But is there not something suspicious about this introspective method and its easy solution? Does it not include first of all the fact which it was to separate, and then say that it is not outside? It is true that outside of conscious processes introspection furnishes no evidence of consciousness. But why should it? Neither does chemistry furnish any evidence of water or radium outside of the things known to contain water or radium. If you wanted arguments for the presence of consciousness outside of empirical conscious processes, you surely would not get them from introspection.

But the problem has not been stated fairly by the introspectionist. The ego is not statable merely as a stream of conscious processes. The ego is an affair of dispositions or tendencies, sometimes conscious, sometimes not. Consciousness surely does not make the stream of life continuous. The tendencies in the way of association and memory are present, sleeping or waking, else they would be of no use. Meaning is a matter of the working of the associative

mechanism, and this is recognized as a physiological fact. What makes a fact suggestive at any one time, what makes culture, is only to a small extent conscious. Even when adaptations are conscious for a while they may become habits. What becomes of consciousness when it is "not needed"? The question is not: Can you observe consciousness outside of conscious processes? Can you, like the old schoolmaster, see some boys that are not here? That is to talk nonsense. The question is: What significance does this fact, consciousness, have in the stream of the ego tendencies, where it is sometimes present, sometimes seemingly absent or absent so far as effective relation to the processes goes; which at most only partly, and in small part, illumines our fund of tendencies even when we are most awake? In short, what makes the difference between sleeping and waking? What happens when we *become* conscious? During sleep we are still there to other observers. We are energetic activities which can become conscious in an instant, by waking us up. In the meantime there is no evidence to others of consciousness. A little change in blood distribution and heat, perhaps, or it may be only an external stimulus of some intensity, furnishes the condition for the reappearance of consciousness, and the wheels of mind go round again. With the increased working of the extraconscious machinery of association we pass from sleeping to dim drowsiness and to organized waking meaning. In the stream of tendencies which we call the ego, there are, besides the conscious processes, the changes which the purposive ego and the spectators must *interpolate* in order to understand the conscious processes. If it were not for this seeming coming and going of consciousness and the continuity of the energetic processes, on which our feeling of continuity itself depends, we would not abstract consciousness—But what does it all mean?

The materialist is ready with a simple and at first sight plausible answer. He at least tries to meet the problem of seeming discontinuity in nature. His answer is that consciousness is a discontinuous function or incidental effect of the mechanical processes. He includes not only consciousness as such in this epiphenomenon, but all conscious processes. These, moreover, are not energy, but a picturesque chiaroscuro or halo of the going-on of the energetic processes, which are usually mechanically conceived. Or, stating it more crassly, but not less metaphorically, "The brain secretes thought as the liver secretes bile." Or, if you want more metaphors, consciousness is to the physiological mechanism what the head-light is to the steam-engine.

But while metaphors have always appealed to human beings, they are not very satisfactory as explanation. The conception of

energy for one thing has changed, and the materialist, familiar with the physical speculations of to-day, would be more apt to use electrical than mechanical metaphors. But that would not essentially alter the problem. We have also seen that conative processes, whether conscious or not, must be thought of as energy. They vary as regards quantity, and they bear definite relations to other forms of energy. We shall have to transfer these, therefore, to the energetic side of the account. Nor is it any argument against these processes that they are different from other forms of energy, that some of them at least are not extended, that they can not be weighed, and that the category of mechanical motion is not, therefore, applicable. Electrical energy and neural energy have neither mass nor weight; they do not come under mechanical motion; yet we have to recognize them as forms of energy and as making definite differences to other forms. We need have no difficulty, therefore, in recognizing mind-stuff as energy. And why should certain processes cease to be energy because illumined by consciousness, any more than space, though not active, prevents bodies from being active, though the activity has a very different value, and scope, too, no doubt, because conscious? The common objection raised against materialism, that it violates the law of conservation of energy, would not be serious if the theory met the facts, as scientific laws are mere generalizations from facts. It would at most only show the limitations of the so-called law. Neither is it an answer to materialism to charge it with moral baseness, as our ideals are what they are on any theory. And sometimes sad things are true. Our only concern now is, does it explain the presence of consciousness? We would have to agree with materialism that consciousness as such is not an energy, and hence can not do what energies do, even though we must recognize conscious *processes* as energy. Consciousness is not capable of quantitative variation. It can not be the cause of motion and change. But can we also regard it as an effect of energy? We are familiar now with all sorts of transformations of energy. We know that mechanical motion can bring about electricity or heat, so different from itself. But can we also conceive of energetic process producing a fact which is not energy at all—not transformable into energy, to be sure, because it is a different sort of fact, but can it, not being energy, be caused by energy? There is an unbridgable *saltus* here in the thinking of materialism; and none have been more candid in admitting this than some of the materialists themselves.

I do not see, however, that the *saltus* is any greater in making a non-energetic consciousness the effect of energetic changes than in recognizing, as James and Minot do, that consciousness is not a thing or energy, and yet make it produce energetic changes. The

chasm is about as wide one way as the other. That one form of energy can bring about changes in another form of energy is within experience and probability, but not that energy should be converted into non-energy, or *vice versa.*

Any theory, whatever it calls itself, which strives to derive consciousness, will have the difficulty of materialism—in losing the quantitative and energetic in what is not energetic. This involves an unintelligible *saltus;* and we shall always, therefore, look for a smoother transition between consciousness, on the one hand, and the world of processes, with their quantitative variations, on the other. This is furnished in the theory of consciousness as a constant in the universe, though depending upon certain conditions for its manifestation, as electricity is now regarded as an original fact (by some the most original), though dependent upon conditions. This brings it into the realm of the familiar.

Materialism has at least the advantage of simplicity, but parallelism is as cumbrous as it is unintelligible. To remedy the fancied injury to the law of the conservation of energy, it duplicates physiological and psychological processes and leaves them suspended in mid-air, without either series making any difference to the other. To speak of psychological contents, where there is no evidence, is surely doubtful psychology, and, so far as I can see, has no epistemological justification. To wind up with idealistic monism is as roundabout as it is a doubtful way of arriving at such a doctrine. To make psychological processes parallel to mechanical rearrangements can only convey sense to a man who does not think about it. And, lastly, to give the world of physical objects any status at all, since it can make no difference to the world of psychic processes, seems impossible. If this furnishes credulous people a short cut to idealism, let them enjoy it.

We have already seen that psychological processes must be regarded as energy, bearing statable relations to other forms of energy. These processes must be stated as physiological energy, whether we make conative or spiritual energy a distinct kind, merely bound up with brain cells as its condition, or not. The physiological body is a net for catching several types of energy, mechanical, chemical, electrical, nervous, and conative. There is no reason for drawing any line of holy and unholy between these, at least for scientific purposes, and together they furnish the individual body, with its race and individual characteristics, its continuities, and its specific activities. There remains the surd of consciousness. To say that this is parallel to energetic processes conveys no meaning to me.

There remains the interaction theory with its insistence upon the causal efficacy of consciousness. With the best of motives, this

theory is as confused epistemologically as the preceding. There can be no sense in speaking of the consciousness of pain or blue as interacting with the physiological processes of pain or blue. The pain processes and the blue processes, no doubt, vary with other energies, and in turn act upon them, but not the *awareness* of them. By stating consciousness as an independent variable, an ultimate, non-energetic fact, we shall have the simplicity of materialism without the contradiction of trying to convert energy into non-energy. We shall fulfill the intent of the materialist by taking consciousness out of the energetic category, while we acknowledge the energetic claims of the conative processes. We shall save the duplication of parallelism and its absurd separation of two sets of processes into independent causal series, but we shall accomplish the intent of parallelism by showing the independent and non-derivable character of consciousness as such. We shall finally accomplish the intent of the interaction theory by showing the energetic character of the conative processes, their efficacious relation to the other energies of nature, while we get rid of the absurdity of having a non-energetic consciousness interact with an energetic world.

It is time we were getting over the false prejudice that the body is something mean and base and that activity is being degraded by being called physiological. The Greeks did not look upon the body as anything mean. On the contrary, it was to them the embodiment of beauty and meaning. It furnished the inspiration for Greek sculpture. It is fraught with the potentialities of life. Plato alone, in some of his pessimistic moods, makes the body a prison house. Aristotle is here the truer Greek. For the evolutionist, the body is the bearer of the tendencies, the biological heritage, of the race; and for the psychologist it must furnish continuity and meaning to life through habit and memory. Mean is what mean does, and good is what good does, and if the body is bound up with all our badness, it also is bound up with all our goodness and appreciation of beauty; it makes us one with the world of energies, at the same time that with its tendencies it differentiates those energies for us. All it needs is consciousness to convert this structure, when it has reached a certain complexity, into actual meaning. And it does not, like Prakriti, vanish at the glance of Purusha. But it furnishes the activity still, though meaningful activity. And so we fail to give it credit. The body is the organ and the music, too, as consciousness is added to the complex bodily energies. The ceaseless, untiring player is nature, which in us becomes purpose and ideals. It is a mistake to identify the body merely with the physical and chemical forms of energy. It includes nervous and will energy as well. There is ample chance for a hierarchy of energies within

the body. It is the bearer not only of the past and present, but it is pregnant with the future.

Inasmuch as we must account for the difference in meaning or in mental activity by the greater complexity on the part of the energetic or physiological conditions, there can be no use in speaking of subconscious mental activity. The test of whether processes are conscious or not must be empirical. Conscious processes are, no doubt, conditioned all the while upon non-conscious processes, but nothing is gained by calling the latter subconscious.

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"TRUTH" VERSUS "TRUTHFULNESS"

MY account of truth is purely logical and relates to its definition only. I contend that you can not tell what the word "true" means, as applied to a statement, without invoking the concept of the statement's workings.

Assume, to fix our ideas, a universe composed of two things only: imperial Cæsar dead and turned to clay, and me, saying "Cæsar really existed." Most persons would naïvely deem truth to be thereby uttered, and say that by a sort of *actio in distans* my statement had taken direct hold of the other fact.

But have my words so certainly denoted *that* Cæsar?—or so certainly connoted *his* individual attributes? To fill out the complete measure of what the epithet "true" may ideally mean, my thought ought to bear a fully determinate and unambiguous "one-to-one-relation" to its own particular object. In the ultra simple universe imagined the reference is uncertified. Were there two Cæsars we shouldn't know which was meant. The conditions of truth thus seem incomplete in this universe, so that it must be enlarged.

Transcendentalists enlarge it by invoking an absolute mind which, as it owns all the facts, can sovereignly correlate them. If it intends that my statement *shall* refer to that identical Cæsar, and that the attributes I have in mind *shall* mean his attributes, that intention suffices to make the statement true.

I, in turn, enlarge the universe by admitting finite intermediaries between the two original facts. Cæsar *had,* and my statement *has,* effects; and if these effects in any way run together, a concrete medium and bottom is provided for the determinate cognitive relation, which, as a pure *actio in distans,* seemed to float too vaguely and unintelligibly.

The real Cæsar, for example, wrote a manuscript of which I see

a real reprint, and say "the Cæsar I mean is the author of *that.*" The "workings" of my thought thus determine both its denotative and its connotative significance more fully. It now defines itself as neither irrelevant to the real Cæsar, nor false in what it suggests of him. The absolute mind, seeing me thus working towards Cæsar through the cosmic intermediaries, might well say: "Such workings only specify in detail what I meant myself by the statement being true. I decree the cognitive relation between the two original facts to mean that just that kind of concrete chain of intermediaries exists or can exist."

But the chain involves facts prior to the statement the logical conditions of whose truth we are defining, and facts subsequent to it; and this circumstance, coupled with the vulgar employment of the terms truth and fact as synonyms, has laid my account open to misapprehension. "How," it is confusedly asked, "can Cæsar's existence, a truth already 2,000 years old, depend for its truth on anything about to happen now? How can my acknowledgment of it be made true by the acknowledgment's own effects? The effects may indeed confirm my belief, but the belief was made true already by the fact that Cæsar really did exist."

Well, be it so, for if there were no Cæsar, there could, of course, be no positive truth about him—but then distinguish between "true" as being positively and completely so established, and "true" as being so only "practically," elliptically, and by courtesy, in the sense of not being positively irrelevant or *un*true. Remember also that Cæsar's having existed in fact may make a present statement false or irrelevant as well as it may make it true, and that in neither case does it itself have to alter. It being given, whether truth, untruth, or irrelevancy shall be also given depends on something pertaining to the statement itself. What "pragmatism" contends for is that you can not adequately define the something if you leave the notion of the statement's functional workings out of your account. Truth meaning agreement with reality, the mode of the agreeing is a practical problem which the subjective term of the relation alone can solve.

People, mixing history with the purely logical inquiry, and falling into inveterate habits of speech, will still say: "The statement is true anyhow, true in advance, born true, true apart from any of its workings, and the workings are themselves determined by that prior truth." This notion of an immanent or inherent truth, meaning a truth with only a part of the constituents of its full definition realized in fact, is, of course, indispensable in practical life. Millions of statements there *pass* for true, for one that lives up to what the full concept implies.

Would it satisfy the repudiators of the fuller definition if we agreed to let them keep the word "true" for what they stickle for so exclusively, namely, the more preliminary and objective conditions of the cognitive relation—so that for any words about Cæsar to be true in that lopped and truncated sense it would suffice that Cæsar should have really existed—while the word "truthful" should be reserved, as having the more concrete sound, for the entire unmutilated notion for which Mr. Schiller and I contend?

Mr. Schiller and I would then appear as fighting the battles of truthfulness against truth. The question would be almost purely academic, for in actual life the true and the truthful would usually denote the same body of actual human statements or beliefs. Even now none of the *facts* which either party emphasizes has ever been denied by the other party, and the quarrel might have the bottom knocked out of it altogether, so far as it related to truth's definition only, by the invention of this or some other pair of new technical terms.

The friends of "truth" would still have to admit, however, that "truthfulness" is the more plenary and fundamental notion, that it includes the whole of "truth" and supplements its deficiencies, and alone defines adequately what correct and perfect knowledge may mean.

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DISCUSSION

PROVISIONAL AND ETERNAL TRUTH

DR. ADAMS treats my little article "Sub Specie Æternitatis" with so much sympathetic courtesy that I venture to say another word in defense of my position. And first let me say that the term which I took for a title was used ironically, with no wish to belittle a phrase of so much dignity and quality. The protest which I entered was against claiming eternal validity for particular theories about existence, which have been produced under conditions of actual history.

I find it a little hard to believe that scientists all continue to conceive their purpose as the discovery of the "real" constitution of things in the sense advocated by Dr. Adams, if I have understood. Recent years have wrought a marked change in this matter. Such a book as Poincaré's "Science and Hypothesis" is no isolated phenomenon. Professor J. J. Thomson writes at the beginning of his recent book, "The Corpuscular Theory of Matter,"[1] that in

[1] I depend for this reference upon the review in the *Athenæum* of December 28, 1907, p. 829.

physics a theory of matter is a policy rather than a creed, and that its function, apart from the coordination of phenomena, is to stimulate and direct experiment.

But to come to the point. It is not so much a matter of what the scientist or the philosopher thinks he is doing as what he has actually got when he reaches a satisfactory conclusion about something materially existent. For a number of years the molecular hypothesis has had the character of ascertained truth. Just at present its future availability is rendered extremely doubtful by the advantages which are claimed for the electron theory. If the electron theory in its radical form shall replace the theory of material atoms, on what basis will the change take place? Will it be because "reality" is made of electrons instead of material molecules, or because the new theory performs precisely the same service, under conditions of wider observation, which the old theory performed under conditions of more restricted observations? Was the corpuscular theory of light believed in less confidently because it was eventually replaced by the ether theory? and what right have we to say that the ether theory has some *a priori* guarantee against being improved upon? And why should we not expect new observations which will require the revision or the rejection of concepts? So long as the old concepts functioned properly and satisfied all the available tests and criteria, how were they distinguishable from "true" concepts? How can "true" concepts be proved "true" except by the use of whatever critical tests are available? The very tests which the antiquated concepts for a time satisfied. It may be that many scientists aim at discovering an ultimate nature of things; I suppose they do: but this attitude seems at the present day a little naïve. One need not deny that there is an ultimate nature of things, but it does seem evident that any human conception of it must be liable to revision in the light of wider observation. And the new conception which replaces the old one will do precisely the same duty as the old one; and possibly, in its field of phenomena, it will not work so well, *i. e.*, it will not be so evidently true as the old one appeared to be in its own narrower field. It may well be that "the system of truths about reality is eternally true." The decision on this point depends on how we use the word truth, a question which has received already a fair amount of ventilation in the pages of this JOURNAL. But I can not see how any system of human judgments about experience shall not be indefinitely liable to revision. And why should any philosophy of history, or any "complete" logic which is a description of actual intellectual methods, be in a different case? Why is the science of to-day and of to-morrow secure in some *a priori* way against the transitions

incidental to its having a future? There are, no doubt, truths of the eternal type, but these are relations in pure logic, with no *a priori* consequences for existence until they are resorted to as satisfactory expressions of the present degree of information. The principle *sub specie æternitatis* seems to mean that given premises have certain consequences and not others. It is a dialectical principle with an application to pure meanings; it is, as Professor Santayana has so brilliantly shown, the Socratic principle which enlightens and directs reasonable conduct, but it does so by means of human judgments about existing cases, by means of the minor premise which lifts existence into the syllogism, and clarifies it with ideas. And to say that any particular theory about the existing objects of experience has eternal validity is to claim either that it states merely the necessary conclusions from adopted premises (logic and mathematics) or that no more information about the subject-matter is forthcoming.

I can not see any cause for dissatisfaction with the position here outlined. To wish for eternally valid theories about existing things is, it seems to me, to wish that information may stop coming in, which is essentially the scholastic attitude.

I suppose I have been only partially aware of the real scope of Dr. Adams's criticism. But one point occurs to me. In significant human problems Dr. Adams admits a measure of variation, while he insists upon an important degree of permanence. This as an empirical observation about human nature is, of course, true. And one can go farther. The principle *sub specie æternitatis* is the guiding principle in a sympathetic appreciation of other times and other people. To understand the human past is to put oneself sympathetically at another's point of view by perceiving there the principles which we recognize as authoritative for ourselves. To refuse to take this step is to pronounce the object of our attention unintelligible, *i. e.,* irrational. Any imaginative interest in the Greek people, any comprehension of social problems in Russia, even the reading of any book, depends upon the initial assumption that intelligible, *i. e.,* logical, sequences characterize the subject-matter. Whether in studying the past we misrepresent it or not, we at least feel a sympathetic interest in it; we are not willing that Plato and Dante shall be unintelligible. And what makes them intelligible is the presence of sequences among ideas and motives and acts which we recognize and respect. And this principle is not merely one for interpreting the past; it is the principle of all human relations where people seek to understand one another.

Quite so. But this is not in the least inconsistent with the position maintained in the earlier part of this discussion, and interpreta-

tions in history are liable to revision in the same way as are theories in science. Any interpretation, any inference, depends upon the application of judgments claimed to be eternally true, but which are, therefore, not existential, while any statement about existing things depends upon the information at hand about the things in question.

It may be replied that the progressive revision of scientific descriptions approaches a limit where the information will be all in, that although this limit may be never reached, nevertheless it is a logical term in the series of descriptions each of which is the correction of a preceding one. What is here claimed is, at the same time, a confession. It is a "logical" term, *i. e.*, it depends upon an assumption. And the assumption is evidently that of a bounded universe. The discussion of this concept would be too far-reaching to be possible here, but two things may be said. The bounded universe is a sufficiently evident fact in the eyes of primitive folk, and it was appropriate to the theology of St. Thomas and the poetry of Dante, but our experience and science hardly reveal anything of the sort. And in the second place, as the arrival at the above-mentioned limit is an event indefinitely remote, it does not confer finality upon this or that specific conception of existence.

I would gladly agree with my critic, and I would not be understood to say that the principle *sub specie æternitatis* has no application. It has, however, the only application which a dialectical principle can have: what is it but the principle of contradiction endowed with the sympathy of a certain human contact and with the dignity of a dramatic universality? And here in the principle of contradiction we have, to be sure, a truth that is eternally true.

Again I ask, why is provisional truth about empirical existence so unsatisfactory? Is there any way of accounting for the exaltation of eternal truth except the persistence of that eighteenth-century enthusiasm for deduction which has caused philosophy to be, even down to our own day, so much more a matter of syllogisms than of observation and inquiry?

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REVIEWS AND ABSTRACTS OF LITERATURE

The Dancing Mouse: A Study in Animal Behavior. ROBERT M. YERKES. New York: The Macmillan Co. 1907. Pp. xxi + 290.

This study is the nearest approach yet made by any student of behavior to giving a complete and systematic account of the varieties and complexities of the actions of a mammalian race. Comparative psychology is advanced by it both from the standpoint of methods of experimentation and from that of the facts which it actually contributes.

The book systematically covers a wide field both historically and experimentally. On account of its comprehensiveness, it stands in pleasing contrast to the interesting, but isolated, bits of natural history which at the present time comprise the factual side of the science of mammalian behavior.

In regard to the time and place of origin of the race of dancing mice, the animals which are the subjects of all of Dr. Yerkes's experiments, the author makes the statement "that a structural variation or mutation which occasionally appears in *Mus musculus,* and causes those peculiarities of movement which are known as dancing, has been preserved and accentuated through selectional breeding by the Chinese and Japanese, until finally a distinct race of mice which breeds true to the dance character has been established. The age of the race is not definitely known, but it is supposed to have existed for several centuries" (p. 15).

Dr. Yerkes treats in two chapters ("Dance Movements" and "Equilibration and Dizziness") of the peculiar movements of the dancer. He discusses these movements both from the standpoint of the literature and in the light of his own observations. Six peculiarities of behavior are noted: (1) The dance movements—whirling, circling, figure-eights, zigzags; (2) restlessness and the quick jerky movements of the head; (3) lack of responsiveness to sounds; (4) more or less pronounced deficiency in orientational and equilibrational powers; (5) lack of visual dizziness; (6) lack of rotational dizziness.

The anatomical and histological work upon the structure of the ear of the dancer is next examined, in order to find a structural basis to which the functional variations just mentioned might be assigned. The author finds reason to doubt the conclusions advanced by Rawitz to the effect that the dancer possesses only one normal canal, the anterior vertical, and that the nervous elements of the cochlea are degenerate. The following quotation from the author serves to give us his position upon the possibility of correlating peculiarities of function with variations in structure: ". . . no structural conditions have been discovered which account satisfactorily for the dancer's peculiarities of behavior. That the ear is unusual in form is highly probable, since three of the four investigators who have studied it carefully agree that it differs more or less markedly from that of the common mouse." ". . . . the status of our knowledge of the structure of the central nervous system is even less satisfactory if possible . . ." (p. 71).

The author finds that while the adult animals are wholly insensitive to auditory stimuli, the young, at least those belonging to certain lines of descent, are sensitive to such stimuli at a short, but definite, period of their lives. His table (p. 89) shows that in these young animals auditory responses may be obtained at the thirteenth, fourteenth, or fifteenth day (the exact age at which such responses may be observed varies from individual to individual) and continue roughly for from two to four days. In the young of another line of descent, no auditory reactions were obtained at a corresponding age or at any later age.

Five chapters of the book are devoted to the sense of sight. Two of these are given over to brightness vision, two to color vision, and one to the role of sight in the daily life of the dancer. Before taking up the results and methods in detail, it may be said that Dr. Yerkes has intelligently and systematically maintained the difficult control factors necessarily involved in the successful carrying out of such experiments.

Since, according to the author, the dancer does not withstand the effects of hunger, and even when hungry does not ordinarily show eagerness to search for food, some other stimulus than that of food had to be sought. The author finds that he may control the naturally abundant and incessant activity of these animals by the use of the electric induction shock. Punishment instead of reward is thus used for forcing the animal to make a discrimination.

The method as applied in these experiments follows in detail: A discrimination box (visual), consisting of a large nest compartment containing food and room for dancing (the latter is an important factor), and a large entrance compartment, containing a door which could be opened by the animal from the end nearest the nest-box. At the farther end of the chamber, two doors, right and left, led, respectively, to two electric-boxes, the floors of which were arranged to give the animal a weak induction shock whenever the experimenter so desired. An opening led from each of these electric-boxes through an alley back to the nest-box. An opportunity for visual discrimination by brightness difference was provided by placing dead-black cardboard at the entrance to one of the electric-boxes and white cardboard similarly at the entrance to the other box. These cardboards were movable and could be attached to the openings leading to the one or to the other box at the will of the experimenter. The mouse was required to choose the entrance surrounded by white cardboard. If this were done the animal could return to the nest-box without receiving an electric shock (the electric shocks were given whenever the mouse entered the electric-box the entrance to which was surrounded by black cardboard). Without entering into Dr. Yerkes's elaborate control tests, it may be said that the mice learned to discriminate perfectly the white cardboard from the black. Efforts were then made to determine how slight a difference in brightness enables the dancer to discriminate one light from another. Two methods of stimulation were used: (1) light was reflected from Nendel's gray papers; (2) white light (electric incandescents) was allowed to illuminate two compartments. These compartments were illuminated separately, the light emanating from above.

Those animals which had already learned to discriminate white cardboard from black in the apparatus just described were tested in the same apparatus again, only the black and white cardboards were replaced by light gray paper (No. 10) and dark gray (No. 20). It was found that they did not always choose the brighter of the two grays as was expected—a certain training period was necessary in order to perfect discrimination. Dr. Yerkes infers from numerous further tests with gray papers that the amount by which Nendel's gray No. 10 differs in brightness from No.

20 is near their threshold of discrimination. In the experiments with transmitted light, the author attempts to answer the question whether Weber's law in any form holds for the brightness vision of the dancing mouse. He became convinced, after many tests, that Weber's law does not hold for the brightness vision of the dancing mouse. Attention is called to the fact that in this test with transmitted light the author apparently does not rule out the possible disturbing influence of possible differences in temperature between the two light compartments.

In the first series of tests on the color vision of these animals colored papers were used as stimuli and found to be unsatisfactory. Approximately monochromatic light filters were then employed. The author characterizes the red as "perfectly satisfactory," the blue-violet as "good" and the green as "poor." After conducting an enormous number of careful tests, he concludes (p. 176) " . . . that, although the dancer does not possess a color sense like ours, it probably discriminates the colors of the red end of the spectrum from those of other regions by difference in the stimulating value of light of different wave-lengths, that such specific, stimulating value is radically different in nature from the value of different wave-lengths for the human eye, and that the red end of the spectrum has a very low stimulating value for the dancer." He then goes on to say that most of the experiments which have hitherto been carried out upon color vision in animals have really failed to touch the color vision problem at all, because sufficient care has not been taken to separate the brightness factor from that of hue—a statement which the reviewer can heartily concur in.

Interesting chapters are devoted to methods of learning, habit formation, efficiency of training methods, the duration of habits, individual, age, and sex differences, and to the inheritance of forms of behavior. It is of interest to note that the author finds that the dancer can be aided in the solution of a problem by being put through the necessary acts. He failed to find the presence of imitation after very careful tests. "Although abundant opportunity for imitation in connection with the opening of the doors in the discrimination box was given to twenty-five individuals, I obtained no evidence of the ability to learn by imitation." This apparent lack of imitation in the dancer is rather surprising in view of the fact that Berry[1] finds evidence for both instinctive and voluntary forms of imitation in the white rat—an animal which the reviewer believes has far less acuity of vision than the dancing mouse.

The author finds no evidence for the belief that a particular form of behavior acquired during the lifetime of an individual can be transmitted by that individual to its offspring.

This work has set a high standard in the field of behavior. Any departure from its tenets in the way of lessening the control of experimental conditions would be a step in the backward direction. The only thing in the way of criticism which can be made about the volume is concerned with the author's rather sweeping condemnation of the use of

[1] *Journal of Comparative Neurology and Psychology*, Vol. XVI., No. 5, 1906.

food as a stimulus in controlling the reactions of animals, and the installation of punishment in its place.

Dr. Yerkes speaks of the inhumaneness of the hunger method. Surely he can not be unaware of the statements of many of the men using this method, to the effect that their animals are not starved, that they get their hunger completely satisfied after the day's tests, and that they remain in better health during experimentation than when idle and surrounded by food. His broad statements will lack experimental support until he has put down in parallel columns the behavior records of two sets of animals, the one set reacting to food, the other to the electrical shock, and these parallel records should be taken from experiments on "many mammals" and not from those on the dancer alone. To these items he would likewise have to add a record of the body weights of the two sets of animals during the period of experimentation (the reviewer has tested the body growth, using increase in weight as an index of growth, of young rats under conditions of training, and has found it normal).

While not condemning the punishment method, it would seem that it must be admitted that its employment in any but extremely simple forms of apparatus, such as that used in discrimination tests, is extremely burdensome and clumsy. Even in discrimination tests, where the difference in the stimuli to be reacted to is slight, the method is used at a peculiar disadvantage because repeated tests in which the animal constantly makes failures, leading always to a shock, tend to make the animal hesitant about reacting at all, and at such times it, at all costs, ought to be kept free from such disturbing influences. Judging from Dr. Yerkes's experiments, where he attempts to find an auditory function in these animals (p. 84) there is a deleterious summation effect which forever precludes the possibility of making the punishment equal from test to test (which is Dr. Yerkes's main contention) regardless of how constant the physical properties of the induction shock are maintained.

But can such a stimulus be kept constant? On the physical side the strength of the battery varies, the perfectness of the contacts varies; likewise the temperature of the wires varies; the animal may happen to tread simultaneously upon the two wires now here, now there, consequently the circuit is completed when a varying resistance is present. On the physiological side, two animals in all probability never offer the same resistance to the current, the difference being due to the physiological state of the organism; two animals differing in weight receive a varying amount of shock, the heavier animal, other conditions being the same, making the more perfect contact. But probably more important than any of the above are the facts that the moisture and cleanliness of the feet differ in different individuals and in the same individual from time to time. These difficulties in the way of using the induction shock in the manner suggested by the author may be for the most part entirely chimerical, but at least the burden of proving that they are insignificant lies with Dr. Yerkes—their insignificance can not be assumed. As an auxiliary method (to be used in connection with food) having its *raison*

d'être in the hastening of a discrimination or an association, we may grant its possible usefulness, but to the propositions that it is more "humane" and that it can be substituted in most situations for the more natural method of using food as a stimulus, we can not agree.

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A Student's History of Philosophy. ARTHUR KENYON ROGERS. Revised edition. New York: The Macmillan Co. 1907. Pp. xiii + 511.

In a department of literary activity in which English written books are not too common, Professor Rogers has achieved a distinct success. Hitherto the Germans would seem to have had a monopoly in the writing of the history of philosophy. We have many admirable translations, but very few original treatises. That there was need for such a work as Mr. Rogers has produced, and that this volume has helped to supply the want, the fact that it has attained to a second edition amply proves. As its name indicates, this book is primarily intended for students, but the cultured world generally will find it interesting and instructive. Within the limit of five hundred pages the author has succeeded in presenting a most luminous, well balanced, and comparatively full treatment of the history of philosophy from its beginnings in Greece to our own times.

There are several features of this work which commend it. For one thing, it is written in clear and simple language, largely avoiding many of those technical terms which are so apt to confuse and repel the young student. Again, it gives exceedingly full extracts from the books dealt with, thus bringing the reader into contact with the various writers themselves. And once more, a unifying principle of development is exhibited in the volume which shows that the history of philosophy is not a series of haphazard isolated opinions, but really a connected whole.

In comparing the first edition with the second, one observes that considerable improvements have been made by way of both omissions and additions. Some parts of the introduction have been left out, and the treatment of Fichte has been curtailed. On the other hand, the section on Kant has been rewritten and augmented; also a brief account of current thought has been appended. As the author himself says, the relative space given to different topics must be a matter of individual judgment. But we feel that while the treatment of Plato is satisfactory, some elements in Aristotle have been overlooked. Again, while our author has done ample justice to Locke, Berkeley, and Hume, he dismisses the Scottish school of common sense with less than a page, barely mentioning Sir Wm. Hamilton. Kant and Hegel, as befits their epoch-making importance, have, each, a considerable space allotted to them; but Herder and Lessing, Fichte and Schelling, are rather summarily dealt with; while Jacobi and Herbart, not to speak of Schiller and Schleiermacher, are omitted. We notice that Mr. Rogers has added to the value of his treatment of Kant by now giving some account, though still rather slight,

of the "Critique of Judgment," which is really the copestone, or at least the connecting link, of Kant's theoretical and practical philosophy. While his study of Kant is exceedingly lucid as far as it goes, Mr. Rogers has a tendency to slur over the difficulties. For example, no account is attempted of the "Deduction of the Categories," nor does he show how, by means of the schema of time, Kant brings the sense perceptions and the notions of the understanding together. We notice that in the present edition a short résumé of Spencer's philosophy is supplied, the want of which was a serious omission in the earlier issue.

Finally, Professor Rogers has brought his book up to date by mentioning some of the writers of recent times. He has omitted, however, all reference to the present philosophical activity of Germany and France. Hartmann, Wundt, Eucken, and Nietzsche, to mention only a few of the German writers, are not named. In a volume which emanates from the United States one would have expected a fuller reference to American writers than that which the author makes. Pragmatism, as represented by Dewey and James, is a force to be reckoned with, and it would have been interesting at least to show its bearing upon, and its relation to, previous tendencies. The writer has evidently a dread of loading his work with names and burdening his narrative with details. The result is that in some places the treatment lacks definiteness and has sometimes the aspect of a philosophy of history rather than a history of philosophy. This seems notably to be the case in the sections called "The Religious Period" and "The Introduction to the Middle Ages," where the history, though interesting, is, perhaps, too general and too profuse for the size of the volume.

Of course, many names which would naturally find their place in a larger work have of necessity been passed over. We must not, however, quarrel with the limits a writer sets himself; and we must repeat that one of the merits of this history is, that while nothing essential to the main stream of thought is omitted, it is not crowded with a mass of subsidiary details. On the whole Mr. Rogers has produced a book which, by reason of its orderliness of arrangement, lucidity of style, and accuracy of statement, can not fail to prove helpful to all who are entering upon the study of philosophy.

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Die Weltanschauungen der grossen Philosophen der Neuzeit. Dritte Auflage. L. BUSSE. Leipzig: B. G. Teubner. 1907. Pp. vi + 164.

The contents of this little volume are a course of popular lectures which Dr. Busse delivered in 1902–03. In dealing with the history of modern philosophy it sets itself, therefore, the double task of technical accuracy and simplicity of presentation; and it is noteworthy for the skill with which its author steers a middle course between the extremes of systematic detail and loose paraphrase. Structurally, the exposition is divided as follows: Part I., modern philosophy to Kant, comprising rationalism

from Descartes to Spinoza, empiricism from Bacon to Locke, philosophy in the century preceding the "Critique of Pure Reason," "The Critical Philosophy." Part II., modern philosophy since Kant, subdivided into the idealistic trend, the realistic trend, neo-Kantianism, positivism. The scope of the work necessitates brevity in the treatment of even the most important systems, and also some omissions, particularly accounts of Hobbes, Fechner, and Wundt; but in spite of these limitations there is a remarkable comprehensiveness in the logical outline. Both externally and internally the philosophical continuity, significant historical relationships, and general direction of development are clearly indicated. The introductory perspectives of the first part are the familiar ones, rationalism and empiricism, dogmatism and skepticism, spiritualism and materialism. Each system is prefaced by brief biographical notes, and the entire exposition exhibits agreeable clearness, instinct for essentials, and sense of proportion. The point at which the reader may feel most inclined to raise a question about the logical linkage is the ascription of empiricism to Locke, and of a "compromise standpoint" between this and rationalism to Hume (p. 49). This appears less satisfactory than the grouping of Locke, Hume, and Berkeley as empiricists, progressive in thoroughness, and only semi-consciously or subordinately rationalistic.

It is in setting forth the internal logical structure that the author is most successful, though his conciseness occasionally makes one wish for a fuller treatment. The compression of Hegel into five pages, is significant in contrast to the allowance of twenty to Leibniz, and twenty-five to Kant. The exposition of Herbartianism fails, in the reviewer's opinion, to relieve that metaphysical realism of the unreal artificial cast which seems to be ingrained in it. The section on Lotze is especially good. An important feature of Dr. Busse's method appears in the pointed criticisms which now and then flash into the text, revealing some vital inconsistency or defect in the system under discussion.

Concerning the popular intelligibility of the work one can not repress a doubt. The reviewer believes that a historical system can not be really understood without a preliminary appreciation of its temperamental and social as well as of its logical motives, and, further, that it can be grasped only by working through its historical technique to a stage where its ideas become plausible in themselves. Not until one sees that the system has vitality, and at least partially fits the world as it presents itself in one's own experience, does one possess the philosopher's own view. From this standpoint Dr. Busse's exposition seems inadequate. Perhaps it is addressed to a more learned company than its preface indicates, and certainly the fact of a third edition testifies to a favorable reception; but it may be doubted whether the volume, with all its merits, reveals the real *Weltanschauungen* of modern philosophy. Rather does it furnish an admirable map by which the reader may guide himself over fields whose intrinsic meaning must be obtained from other sources—perhaps best by studying the fields themselves.

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Rousseau. PAUL HENSEL. Leipzig: B. G. Teubner. 1907. Pp. 122.

To the literature upon Rousseau, already so extensive, has been added a volume by Dr. Hensel which is not to be considered in the light of a biography so much as an appreciation. The aim of the book, according to the design of the series, "Aus Natur und Geisteswelt," is to shed the light of modern science upon weighty questions of universal interest in such a way as to assist individuals to achieve the freedom and self-reliance of the spiritual life, at least to a degree beyond the narrow circle within whose limits they are generally walled and confined by the circumstances of their vocation. There are chapters upon Rousseau the man, his philosophy of history, his philosophy of right, his theory of education, the "Nouvelle Héloïse," and the philosophy of religion, together with a synchronic table of the life and writings of the citizen of Geneva. Lacking the brilliancy and exhaustiveness of Morley's "Rousseau," the book is not less to be welcomed for its evidence of soundness of scholarship and sanity and impartiality of judgment. Over against Voltaire, Rousseau is regarded as belonging to an alternative type of greatness. He is an originator, where Voltaire was a completer; a romanticist, where Voltaire was a classicist; a bearer in his bosom of the modern age, which only he possessed, where Voltaire was the master of the age of the Enlightenment; a star rising in gloom and mystery far from the full realization of his glory, where Voltaire was as the sun in his zenith. The "Confessions" of Rousseau have been discredited, but without reason; they not only claim objectivity, but they come from the pen of a master in the method of introspection, and are still the chief source of our understanding of Rousseau the man. It is not by chance that so much of the space of the "Confessions" is given to the recollections of Rousseau's childhood, for the life of childhood is more *feeling* than is the life of the adult, and Rousseau not only lived by his feelings, but cherished and remembered them. None took precedence of his love of country; no sorrow afflicted him more than the persecution which proceeded against him from the government of his beloved Genoa, and his conversion from Calvinism to Catholicism was little more than the logical consequence of the prior step of flight. The conduct of Rousseau was often ill-advised, even inexplicable, but in this he remained a child, that to him the world was always a world of dreams. Only one of his works, the "Nouvelle Héloïse," was a labor of joy and love, the rest were burdens taken upon him to be shuffled off; for himself, he was happy when he could live in the moment. His friendship and love, however unworthy, were at least not to be bought for gold, but involved a deep inner relation that must be felt in order to be understood.

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JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. Band 46, Heft 5. *Beiträge zur speziellen Psychologie auf Grund einer Massenuntersuchung* (pp. 321–333): G. HEYMANS und E. WIERSMA. – The authors report that the results of their former questionnaire (*Zeitschrift für Psychologie,* etc., Bds. 42, 43, 45) upon the mental and moral characteristics of men and women, which was answered almost exclusively by men, are confirmed by the answers received from a considerable number of women. The few cases of reversal, 59 out of 222 questions, show no tendency on the part of either the men or women to idealize the same or opposite sex. *Über die psychologischen und die logischen Grundlagen des Bewegungsbegriffes* (pp. 334–344): MAX FRISCHEISEN-KÖHLER. – Hamann's analysis of the psychological basis of the concept of motion (*Zeitschrift für Psychologie,* etc., Bd. 45) is found inadequate to the comprehension of various mathematical and physical applications of the concept. Thorough analysis shows that the only difference between psychology and physical science is a methodological one. *W. Wundts Stellung zu meiner Theorie der stroboskopischen Erscheinungen und zur systematischen Selbstwahrnehmung* (pp. 345–362): KARL MARBE. – Marbe maintains that the stroboscopic effect can be stated in terms of the operation of Talbot's law together with the fact that the perception of movement does not fail when a phase of it is barred from view. The phases need not be perceived at rest. There is no interruption of the perception of movement, and consequently no need for any mental unification. He attacks very warmly what he calls Wundt's *Behauptungsmethode,* and insists that a sufficient explanation can be reached without going beyond the facts actually present in consciousness. *Literaturbericht.*

Baldwin, James Mark. *Thought and Things.* Vol. II: *Experimental Logic, or Genetic Theory of Thought.* London: Swan, Sonnenschein & Co.; New York: The Macmillan Co. 1908. Pp. xv + 436. $2.75 *net.*

Becher, Erich. *Philosophische Voraussetzungen der exakten Naturwissenschaften.* Leipzig: J. A. Barth. 1907. Pp. viii + 243. 6.50 M.

Buttel-Reepen, H. v. *Are Bees Reflex Machines?* Experimental contribution to the natual history of the honey-bee. Translated by Mary H. Geisler. Medina, Ohio: The A. I. Root Co. 1907. Pp. 48.

Coignet, C. *L'énergétique et le mecanisme au point de vue des conditions de la connaissance.* Paris: Felix Alcan. 1908. Pp. 181. 2.50 fr.

Grasset, J. *Introduction physiologique à l'étude de la philosophie.* Paris: Felix Alcan. 1908. Pp. xi + 368. 5 fr.

Hebberd, S. S. *The Philosophy of History.* Revised edition. New York: Maspeth Publishing House. 1908. Pp. 307.

Rageot, Gaston. *Les savants de la philosophie.* Paris: Felix Alcan. 1908. Pp. 179. 2.50 fr.

Schiller, F. C. S. *Plato or Protagoras?* Oxford: B. H. Blackwell; London: Simpkin, Marshall & Co. 1908. Pp. 31.

Tear, Daniel Ambrose. *The Logical Basis of Educational Theory from the Standpoint of "Instrumental" Logic.* Chicago: The University of Chicago Press. 1908. Pp. 58. 53 cents *net.*

NOTES AND NEWS

THE Clarendon Press has begun the publication of the works of Aristotle in English with the "Parva Naturalia," translated by J. I. Beare, Regius professor of Greek in the University of Dublin, and G. R. T. Ross, lecturer on philosophy and education in the Hartley University College, Southampton. The following statement is from the publishers' prospectus: "It was the desire of the late Master of Balliol, Dr. Benjamin Jowett, as formulated in his will, that the proceeds from the sale of his works, the copyright in which he bequeathed to Balliol College, should be used to promote the study of Greek literature, especially by the publication of new translations and editions of Greek authors. In a codicil to his will he expressed the hope that the translation of Aritotle's works begun by his own translation of the 'Politics' should be proceeded with as speedily as possible. The College resolved that the funds thus accruing to them should, in memory of his services to the College and to Greek letters, be applied to the subvention of a series of translations of the works of Aristotle. Through the cooperation, financial and other, of the Delegates of the University Press, it has now become possible to begin the realization of this design. By agreement between the College and the Delegates of the Press the present editors were appointed to superintend the carrying out of the scheme. The series, of which the first instalment is now brought before the public, is published at the joint expense and risk of the College and the Delegates of the Press. The editors have secured the cooperation of various scholars in the task of translation. The translations make no claim to finality, but aim at being such as a scholar might construct in preparation for a critical edition and commentary. The translation will not presuppose any critical reconstitution of the text. Wherever new readings are proposed the fact will be indicated, but notes justificatory of conjectural emendations or defensive of novel interpretations will, where admitted, be reduced to the smallest compass. The editors, while retaining a general right of revision and annotation, will leave the responsibility for each translation to its author, whose name will in all cases be given. Translators have been found for the 'Organon,' 'Physics,' 'De Cælo,' 'De Anima,' 'Historia Animalium,' 'De Animalium Generatione,' 'De Insecabilibus Lineis,' 'Metaphysics,' 'Eudemian Ethics,' 'Rhetoric,' and 'Poetics,'

and it is hoped that the series may in course of time include translations of all the extant works of Aristotle. The editors would be glad to hear of scholars who are willing to undertake the translation of such treatises as have not already been provided for, and invite communications to this end."

Nature of February 6 notices the Columbia University "non-technical" lectures as follows: "At the anniversary dinner of the Royal Society on November 30 last, Lord Dunedin bewailed the fact that few men of science make any attempt to describe their investigations in language which can be understood by men of culture without special scientific knowledge. This speech . . . gave rise to a correspondence in the *Times,* in which the advantage of increasing interest in scientific work by making the results as widely known as possible was insisted upon in many quarters. A similar necessity has been recognized in America, and an attempt is being made at Columbia University to provide literature of the kind required. The Columbia University Press has arranged to publish in the form of pamphlets a series of twenty-two descriptive lectures in non-technical language of the achievements of science and modern scholarship. We have received copies of the first two pamphlets; the first, on mathematics, is by Professor C. J. Keyser, and the second, on physics, by Professor E. F. Nichols. A doubt may be expressed as to whether the language of these lectures will be simple enough for the public for whom they are intended. The pamphlets partake largely of the character of the Royal Institution lectures, reprints of which are often available in this country, and contain terms and ideas which, though simple enough to the reader with some training in science, present difficulty to the student whose education has been chiefly on literary lines. It will be interesting to learn later the extent of the encouragement received by the Columbia University Press. The price of the pamphlets is in every case to be twenty-five cents."

THE third international congress for the History of Religions will be held at Oxford, September 15–18, in quarters provided by the University. There are to be eight divisions: 1. Religions of the lower civilizations, including Mexico and Peru. 2. Religions of the Chinese and Japanese. 3. Religions of the Egyptians. 4. Religions of the Semitic races. 5. Indian and Iranian religion. 6. Religions of the Greeks and Romans. 7. Religions of the Germans, Celts, and Slavs. 8. The Christian religion. The price of a member's ticket is £1, of a lady's ticket, 10s. The languages used will be English, French, German, and Italian. Communications and inquiries may be addressed to J. Estlin Carpenter, 109 Banbury Road, and to L. R. Farnell, 191 Woodstock Road, Oxford.

AT the recent annual meeting of the Southern Society for Philosophy and Psychology, at Washington, D. C., the following officers were elected for the year 1908: President, Professor J. Macbride Sterrett, George Washington University; Vice-president, Professor Albert Lefevre, University of Virginia; Secretary-treasurer, Professor Edward Franklin

Buchner, University of Alabama. Additional members of the Council: to serve one year, Professor A. Caswell Ellis, University of Texas, and Professor Edgar J. Swift, Washington University; to serve two years, Dr. William T. Harris, Washington, D. C., and President D. B. Purinton, West Virginia University; to serve three years, Professor J. Mark Baldwin, Johns Hopkins University, and Mr. Reuben Post Halleck, Boys' High School, Louisville, Ky.

IT is announced that an International Positivist Congress will be held at Naples on April 27. The program will consist of two parts, one devoted to the elucidation of positivist principles, the other to their applications to the problems of psychology, ethics, pedagogy, comparative theology, etc. Among those who have promised to read papers are Professor Haeckel, Professor Lombroso, M. Yves Guyot, Professor Villari, and Lord Avebury.

DR. JOHN B. WATSON, assistant professor of experimental psychology at the University of Chicago, has been appointed professor of experimental and comparative psychology at the Johns Hopkins University, where he succeeds Professor George M. Stratton. At the same university Dr. Edward F. Buchner, professor of philosophy and education in the University of Alabama, has been appointed professor of education and philosophy.

PROFESSOR JAMES WARD delivered the first six of the Gifford lectures for 1907–8 at the University of St. Andrews, December 7–17, on the subject "The Realm of Ends." The topics of the lectures were "Introductory," "The One and the Many," "Pluralism," "The Contingency in the World," "Evolution as Epigenesis and Equilibration," "The Goal of the Higher Life."

PROFESSOR JULIUS KAFTAN, of the University of Berlin, has published three addresses under the title "Drei akademische Reden," and treating of "Die Lehre Kants vom Kategorischen Imperativ," "Der etische Wert der Wissenschaft," and "Die Einheit des Erkennens."

A COLLECTION of the letters, poems, and the as yet unpublished literary remains of David Friedrich Strauss will be exhibited in the Schiller Museum, at Marbach, this summer in commemoration of the one hundredth anniversary of Strauss's birth.

HENRI POINCARÉ has been elected a member of the French Academy.